



# AFCTN Test Report 93-026

AFCTB-ID  
91-059



## Technical Publication Transfer Test

Using:



General Dynamics'  
Land Systems Division Data



MIL-M-28001 (SGML)  
MIL-R-28002 (Raster)



19960822 026

Quick Short Test Report

16 October 1991



Prepared for  
Electronic Systems Center

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DISTRIBUTION STATEMENT A  
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Distribution Unlimited

**AFCTN Test Report**  
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**16 October 1991**

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## 1. Introduction

### 1.1 Background

The Department of Defense (DoD) Air Force Continuous Acquisition and Life-Cycle Support (CALS) Test Network (AFCTN) is conducting tests of the military standard for the Automated Interchange of Technical Information, MIL-STD-1840A, and its companion suite of military specifications. The AFCTN is a DoD sponsored confederation of voluntary participants from industry and government managed by the Electronic Systems Center (ESC).

The primary objective of the AFCTN is to evaluate the effectiveness of the CALS standards for technical data interchange and to demonstrate the technical capabilities and operational suitability of those standards. Two general categories of tests are performed to evaluate the standards; formal and informal.

Formal tests are large and comprehensive, which follow a written test plan, require specific authorization from the DoD, and may take months to prepare, execute, and report.

Informal tests are quick and short, used by the AFCTN technical staff, to broaden the testing base. They include representative samples of the many systems and applications used by AFCTN participants. They also allow the AFCTN staff to gain feedback from many industry and government interpretations of the standards, to increase the base of participation in the CALS initiative, and respond to the many requests for help that come from participants. Participants take part voluntarily, benefit by receiving an evaluation of their latest implementation (interpretation) of the standards, interact with the AFCTN technical staff, gain experience using the standards, and develop increased confidence in them. The results of informal tests are reported in Quick Short Test Reports (QSTRs) that briefly summarize the standard(s) tested, the hardware and software used, the nature of the test, and the results.

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## 1.2 Purpose

The purpose of the informal test, reported in this QSTR, was to analyze General Dynamics, Land Systems Division's interpretation and use of the CALS standards in transferring technical publications data. General Dynamics used its CALS Technical Data Interchange System to produce data, in accordance with the standards, and delivered it to the AFCTN technical staff on a 9-track magnetic tape.

---

## 2. Test Parameters

Test Plan: AFCTB 91-059

Date of  
Evaluation: 16 October 1991

Evaluator: George Elwood  
Air Force CALS Test Bed  
HQ ESC/ENCP  
4027 Colonel Glenn Hwy.  
Suite 200  
Dayton OH 45431-1672

Data  
Originator: General Dynamics  
Land Systems Division  
Attn: Claire McClary  
P.O. Box 527  
Warren, MI 48090

Data  
Description: Technical Manual Test  
1 Document Declaration file  
1 Document Type Definitions (DTD)  
1 Text file  
45 Raster files

Data  
Source System:

Text/Standard Generalized Markup Language (SGML)

**HARDWARE**

Unknown

**SOFTWARE**

Unknown

Raster

**HARDWARE**

Unknown

**SOFTWARE**

Unknown



**Evaluation**

**Tools Used:**

**MIL-STD-1840A (TAPE)**

SUN 3/280

AFCTN Tapetool v1.2.8 UNIX

AGFA Compugraphics CALS v40.4

Cheetah Gold 486

USLynx 1840A Tape Handler

AFCTN Tapetool v1.2.8 DOS

**MIL-M-28001 (SGML)**

SUN 3/60

AGFA Compugraphics CALS

Cheetah Gold 486

Exoterica XGML Normalizer v1.2e3.2

**MIL-R-28002 (Raster)**

SUN 3/60

Rosetta Technologies Preview v3.1

Cheetah

Inset Systems HiJaak v2.02

Software Publishing Corporation

(SPC) Harvard Graphics v3.0

**Standards**

**Tested:**

MIL-STD-1840A

MIL-M-28001

MIL-R-28002

### 3. 1840A Analysis

#### 3.1 External Packaging

The tape arrived at the Air Force CALS Test Bed (AFCTB) enclosed in a box in accordance with ASTM D 3951. The exterior of the box was marked with a magnetic tape warning. This label was not the one defined in MIL-STD-1840A para. 5.3.1.3 but contained the same information.

The tape was enclosed in a barrier bag or barrier sheet material as required by MIL-STD-1840A, para. 5.3.1.2. Inspection of the tape reel showed the label indicating the recording density, as required by MIL-STD-1840A, para. 5.3.1. Enclosed in the box was a packing list showing all files that were recorded on the tape.

#### 3.2 Transmission Envelope

The 9-track tape received by the AFCTB contained MIL-STD-1840A files. The files were named per the standard conventions.

##### 3.2.1 Tape Formats

The 1840A tape was run through the AFCTN *Tapetool* v1.2.8 UNIX utility. No errors and one note were reported during the evaluation of the tape. Part of the tape log is shown in Appendix A, Section Two, Tape Import Log.

The reported note relates to the use of ANSI Standard Level Three. MIL-STD-1840A permits the use of both level three and four ANSI standards but the most current level should be used and addressed.

Label Standard Version: 3

\*\*\* NOTE (ANSI X3.27; 8.3.1.8) - The Label Standard Version should be 4 to represent the current level of ANSI X3.27.

The AGFA CALS *read1840A* tape utility read the tape without a problem. No errors were reported.

The tape was read using the AFCTN Tapetool V1.2.8 Dos with the same results as reported on the UNIX system.

### 3.2.2 Declaration and Header Fields

No errors were reported in the Document Declaration file header or any of the data headers.

## 4. IGES Analysis

No Initial Graphics Exchange Specification (IGES) files were included on tape.

## 5. SGML Analysis

The Text files from this document were tested using the Exoterica XGML Normalizer parser. The DTD parsed without an error. The Text parsed with one reported error. The error occurred on line 2174 in the text. The para0 tag required a title and an end title tag. When this was inserted, the file parsed without an error. Shown below is the DTD with the title entity, the text as it appeared on the tape and the corrected text.

```
<!-- MRM June 1991: %titles; now required because %sect; content -->
<!--                model was amibiguous with it as optional. -->
<!-- ENTITY % titles "(title%shorttitle;)" -->
<!ENTITY % titles "(title%shorttitle;)">
```

```
<para0 tocentry='0'>
<table tabstyle='ESUPP'>
<title></title>
```

```
<para0 tocentry='0'><title></title>
<table tabstyle='ESUPP'>
<title></title>
```

---

---

## 6. Raster Analysis

All 45 Raster files were checked using the AFCTN *validg4* utility. This utility reported no errors with any of the files. A copy of the *validg4* log for file D001R004 is shown below.

```
density      = 300
path length  = 1045
scan lines   = 929
bit format   = MSB
lines read   = 929
total bytes  = 11181
decode time  = 2 secs
```

Five files were tested using Rosetta Technologies' *Preview*. The selected files were converted and displayed without a problem. Hard copies of the files are included in the Appendix to this report. The files were printed at high quality on a postscript printer.

The same five files were moved to the Cheetah 486 PC. Inset Systems' *HiJaak* was used to convert the CALS Raster files to PCX format. This was accomplished without any reported errors. The five PCX formatted files were read into SPC's *Harvard Graphics* v3.0 and printed without a problem. The hard copies of these files are included in the Appendix to this report. These images were printed at high quality on a HP IIIsi.

The only comment on the Raster images is quality. Some of the images would be at minimum acceptability. This comment is based on the enlarged images generated during the evaluation of the Raster files. If the files were output in the size used in the document the images would be of acceptable quality. The enlargement of the images, by the AFCTB, resulted in some degradation in quality.

## 7. CGM Analysis

No Computer Graphics Metafile (CGM) files were included on the tape.

## 8. Conclusions and Recommendations

In summary, the MIL-STD-1840A tape from General Dynamics, Land Systems Division was basically correct. The tape was read by all of the tape reading utilities, available in the AFCTB, with no reported errors.

The SGML file contained one error. The DTD had been modified to require title tags with a para0 tag. One of the title tags was missing in the file.

All Raster images were valid files. They could be read, displayed, and printed without any problems.

## 9. Appendix A - Tapetool Report Logs

### 9.1 Tape Catalog

Air Force CALS Test Network Catalog Evaluation - Version 1.2; Release Number 8

Standards referenced:

MIL-STD-1840A (1987) - Automated Interchange of Technical Information

MIL-R-28003 (1988) - Digital Representation For Communication Of  
Illustration Data; CGM Application Profile

ANSI X3.27 (1987) - File Structure and Labeling of Magnetic Tapes  
for Information Interchange

ANSI X3.4 (1986) - Coded Character Sets - 7 Bit ASCII

Tue Oct 15 16:18:25 1991

MIL-STD-1840A File Catalog

File Set Directory: /cals/tapetool8/Set043

Page: 1

File Name	File Type	Record Format/ Length	Block Length/Total	Selected/ Extracted
D001	Document Declaration	D/00260	02048/000001	Extracted
D001R002	Raster	F/00128	02048/000010	Extracted
D001R003	Raster	F/00128	02048/000006	Extracted

<<<< PART OF LOG REMOVED HERE >>>>

D001R046	Raster	F/00128	02048/000005	Extracted
D001T001	Text	D/00260	02048/000053	Extracted
D001G047	DTD	D/00260	02048/000020	Extracted

Catalog Process terminated normally.

---

## 9.2 Tape Evaluation Log

Air Force CALS Test Network Tape Evaluation - Version 1.2; Release Number 8

Standards referenced:

ANSI X3.27 (1987) - File Structure and Labeling of Magnetic Tapes  
for Information Interchange

ANSI X3.4 (1986) - Coded Character Sets - 7 Bit ASCII

Tue Oct 15 16:17:53 1991

ANSI Tape Import Log

Allocating tape drive /dev/rmt0...

/dev/rmt0 allocated.

VOL1GDLS01

3

Label Identifier: VOL1  
Volume Identifier: GDLS01  
Volume Accessibility:  
Owner Identifier:  
Label Standard Version: 3

\*\*\* NOTE (ANSI X3.27; 8.3.1.8) - The Label Standard Version  
should be 4 to represent the current level of ANSI X3.27.

HDR1D001 GDLS0100010001000100 91283 91283 000000DECFE11A

Label Identifier: HDR1  
File Identifier: D001  
File Set Identifier: GDLS01  
File Section Number: 0001  
File Sequence Number: 0001  
Generation Number: 0001  
Generation Version Number: 00  
Creation Date: 91283  
Expiration Date: 91283  
File Accessibility:  
Block Count: 000000  
Implementation Identifier: DECFE11A

HDR2D0204800260

00

Label Identifier: HDR2  
Recording Format: D  
Block Length: 02048





Block Count: 000000  
Implementation Identifier: DECFE11A

HDR2F0204800128

00

Label Identifier: HDR2  
Recording Format: F  
Block Length: 02048  
Record Length: 00128  
Offset Length: 00

\*\*\*\*\* Tape Mark \*\*\*\*\*

Actual Block Size Found = 2048 Bytes.

Number of data blocks read = 10.

\*\*\*\*\* Tape Mark \*\*\*\*\*

EOF1D001R002            GDLS0100010002000100 91283 91283 000010DECFE11A

Label Identifier: EOF1  
File Identifier: D001R002  
File Set Identifier: GDLS01  
File Section Number: 0001  
File Sequence Number: 0002  
Generation Number: 0001  
Generation Version Number: 00  
Creation Date: 91283  
Expiration Date: 91283  
File Accessibility:  
Block Count: 000010  
Implementation Identifier: DECFE11A

EOF2F0204800128

00

Label Identifier: EOF2  
Recording Format: F  
Block Length: 02048  
Record Length: 00128  
Offset Length: 00

\*\*\*\*\* Tape Mark \*\*\*\*\*

<<<< PART OF LOG REMOVED HERE >>>>

HDR1D001T001

GDLS0100010047000100 91283 91283 000000DECFE11A

---

Label Identifier: HDR1  
File Identifier: D001T001  
File Set Identifier: GDLS01  
File Section Number: 0001  
File Sequence Number: 0047  
Generation Number: 0001  
Generation Version Number: 00  
Creation Date: 91283  
Expiration Date: 91283  
File Accessibility:  
Block Count: 000000  
Implementation Identifier: DECFILE11A

HDR2D0204800260

00

Label Identifier: HDR2  
Recording Format: D  
Block Length: 02048  
Record Length: 00260  
Offset Length: 00

\*\*\*\*\* Tape Mark \*\*\*\*\*

Actual Block Size Found = 2048 Bytes.

Number of data blocks read = 53.

\*\*\*\*\* Tape Mark \*\*\*\*\*

EOF1D001T001            GDLS0100010047000100 91283 91283 000053DECFILE11A

Label Identifier: EOF1  
File Identifier: D001T001  
File Set Identifier: GDLS01  
File Section Number: 0001  
File Sequence Number: 0047  
Generation Number: 0001  
Generation Version Number: 00  
Creation Date: 91283  
Expiration Date: 91283  
File Accessibility:  
Block Count: 000053  
Implementation Identifier: DECFILE11A

EOF2D0204800260

00

Label Identifier: EOF2  
Recording Format: D

Block Length: 02048  
Record Length: 00260  
Offset Length: 00

\*\*\*\*\* Tape Mark \*\*\*\*\*

HDR1D001G047            GDLS0100010048000100 91283 91283 000000DECFILE11A

Label Identifier: HDR1  
File Identifier: D001G047  
File Set Identifier: GDLS01  
File Section Number: 0001  
File Sequence Number: 0048  
Generation Number: 0001  
Generation Version Number: 00  
Creation Date: 91283  
Expiration Date: 91283  
File Accessibility:  
Block Count: 000000  
Implementation Identifier: DECFILE11A

HDR2D0204800260

00

Label Identifier: HDR2  
Recording Format: D  
Block Length: 02048  
Record Length: 00260  
Offset Length: 00

\*\*\*\*\* Tape Mark \*\*\*\*\*

Actual Block Size Found = 2048 Bytes.

Number of data blocks read = 20.

\*\*\*\*\* Tape Mark \*\*\*\*\*

EOF1D001G047            GDLS0100010048000100 91283 91283 000020DECFILE11A

Label Identifier: EOF1  
File Identifier: D001G047  
File Set Identifier: GDLS01  
File Section Number: 0001  
File Sequence Number: 0048  
Generation Number: 0001  
Generation Version Number: 00  
Creation Date: 91283  
Expiration Date: 91283

File Accessibility:  
Block Count: 000020  
Implementation Identifier: DECFIL11A

EOF2D0204800260

00

Label Identifier: EOF2  
Recording Format: D  
Block Length: 02048  
Record Length: 00260  
Offset Length: 00

\*\*\*\*\* Tape Mark \*\*\*\*\*

\*\*\*\*\* Tape Mark \*\*\*\*\*

##### End of Volume GDLS01 #####

##### End Of Tape File Set #####

Deallocating /dev/rmt0...

Tape Import Process terminated with 0 error(s), 0 warning(s),  
and 1 note(s).

---

## 9.3 Tape File Set Validation Log

Air Force CALS Test Network File Set Evaluation - Version 1.2; Release Number  
8 Standards referenced: MIL-STD-1840A (1987) - Automated Interchange of  
Technical Information MIL-R-28002 (1989) - Raster Graphics Representation  
In Binary Format, Requirements For  
Tue Oct 15 16:18:25 1991

### MIL-STD-1840A File Set Evaluation Log

File Set: Set043

Found file: D001  
Extracting Document Declaration Header Records...  
Evaluating Document Declaration Header Records...

srcsys: General Dynamics Land Systems Division  
srcdocid: TM 9-235  
srcrelid: NONE  
chglvl: ORIGINAL  
dteisu: 19901030  
dstsys: AMCCOM  
dstdocid: TM 9-2350-25  
dstrelid: NONE  
dtetrm: 19910314  
dlvacc: Per J. Seward Request  
filcnt: T1, R45, G1  
ttlcls: UC  
doccls: UC  
doctyp: Technical Manual  
docttl: DS/GS Maintenance Manual

Found file: D001R002  
Extracting Raster Header Records...  
Evaluating Raster Header Records...

srcdocid: TM 9-235  
dstdocid: TM 9-2350-25  
txtfilid: W  
figid: 45  
srcgph: V1M-001979  
doccls: NONE  
rtype: 1  
rorient: 000,270  
rpelcnt: 001045,002266  
rdensty: 0300

---

notes: NONE

Saving Raster Header File: D001R002\_HDR  
Saving Raster Data File: D001R002\_GR4

<<<<< PART OF LOG REMOVED HERE >>>>>

Found file: D001R046  
Renaming file from => /cals/tapetool8/Set043/D001R046  
to => /cals/tapetool8/Set043/D001/D001R046  
Extracting Raster Header Records...  
Evaluating Raster Header Records...

srcdocid: TM 9-235  
dstdocid: TM 9-2350-25  
txtfilid: W  
figid: 1  
srcgph: VITST0000-000077  
doccls: UC  
rtype: 1  
rorient: 000,270  
rpelcnt: 001020,000597  
rdensty: 0300  
notes: NONE

Saving Raster Header File: D001R046\_HDR  
Saving Raster Data File: D001R046\_GR4

Found file: D001T001  
Renaming file from => /cals/tapetool8/Set043/D001T001  
to => /cals/tapetool8/Set043/D001/D001T001  
Extracting Text Header Records...  
Evaluating Text Header Records...

srcdocid: TM 9-235  
dstdocid: TM 9-2350-25  
txtfilid: W  
doccls: UC  
notes: NONE

Saving Text Header File: D001T001\_HDR  
Saving Text Data File: D001T001\_TXT

Found file: D001G047  
Renaming file from => /cals/tapetool8/Set043/D001G047  
to => /cals/tapetool8/Set043/D001/D001G047  
Extracting DTD Header Records...

Evaluating DTD Header Records...

srcdocid: TM 9-235  
dstdocid: TM 9-2350-25  
notes: NONE

Saving DTD Header File: D001G047\_HDR  
Saving DTD Data File: D001G047\_DTD

Evaluating numbering scheme...  
No errors were encountered during numbering scheme evaluation.  
Numbering scheme evaluation complete.

Checking file count...  
No errors were encountered during file count verification.  
File Count verification complete.

No errors were encountered in Document D001.

No errors were encountered in this File Set.

MIL-STD-1840A File Set Evaluation Complete.

## 10. Appendix B - SGML Parser Logs

### 10.1 XGML Parser Log

NOTE: XGML reported the error on the wrong line. This bug has been fixed in current releases of the software.

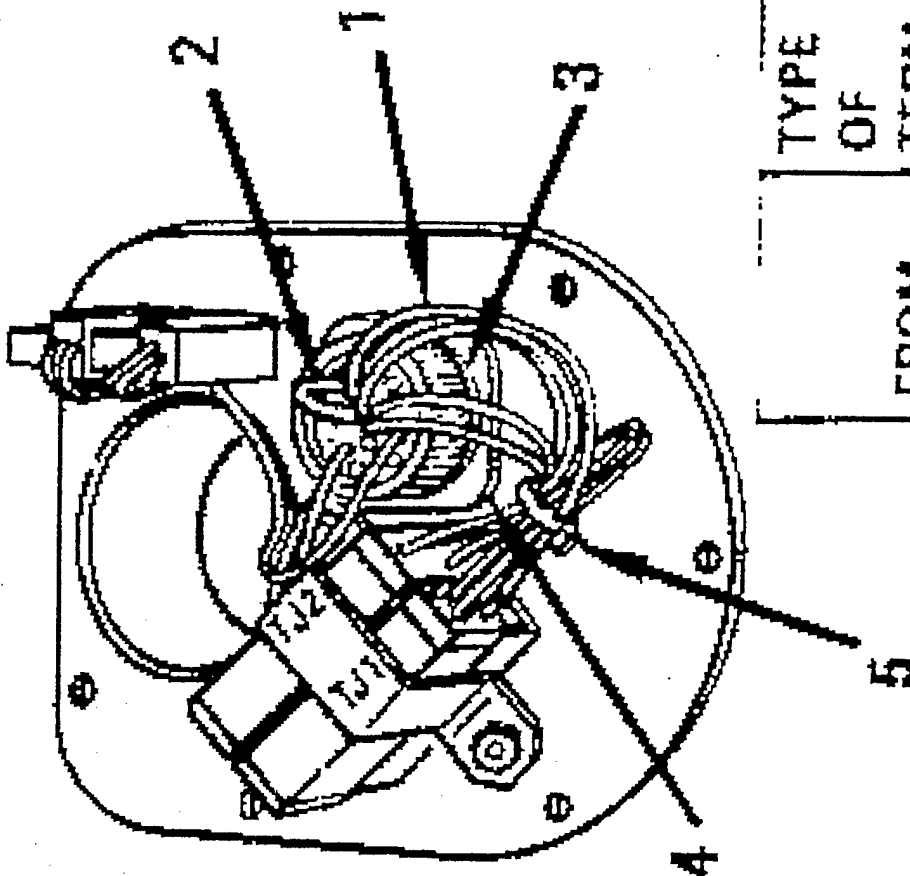
C:\XGML\XGMLNORM.EXE --  
Error on line 2591 in file \tapetool\set004\d001\d001t001.txt:  
A start tag is missing that must not be omitted.  
The element is 'TITLE'.

C:\XGML\XGMLNORM.EXE --  
Error on line 2591 in file \tapetool\set004\d001\d001t001.txt:  
An end tag is missing that must not be omitted.  
The element is 'TITLE'.



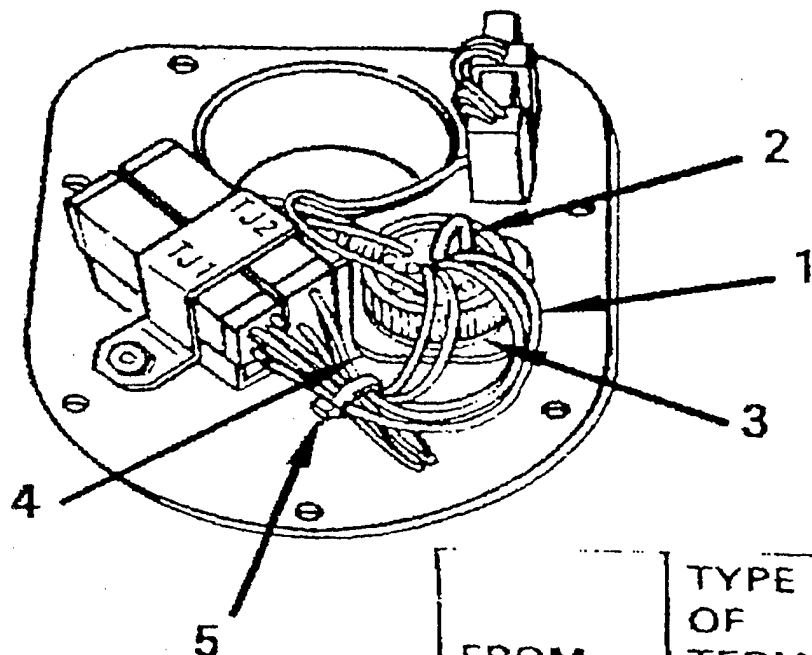
## 11. Appendix C - Raster Detailed Analysis

### 11.1 D001R004 - Preview



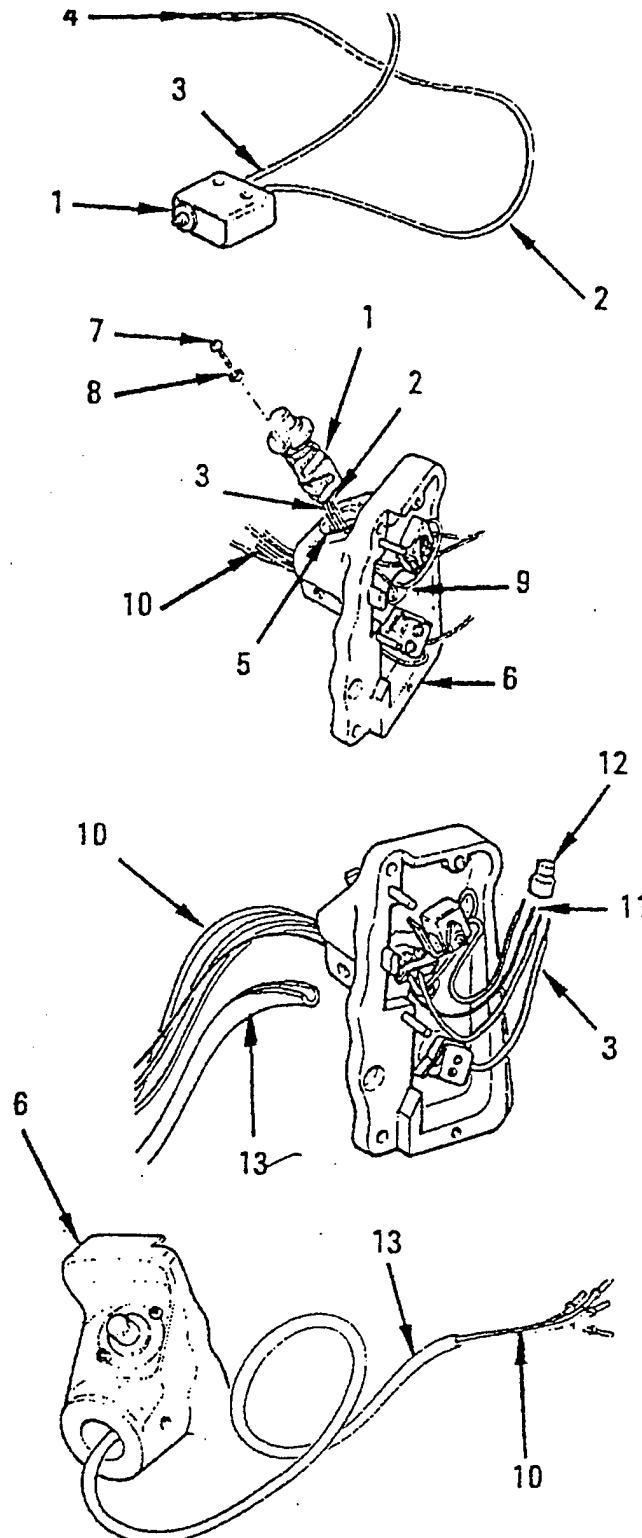
FROM	TYPE OF TERM	TO	TYPE OF TERM
TJ1-E	CONTACT	J1-A	CONTACT
TJ2-K	CONTACT	J1-B	CONTACT
TJ2-F	CONTACT	J1-G	CONTACT
TJ2-G	CONTACT	J1-T	CONTACT
TJ2-H	CONTACT	J1-R	CONTACT
TJ2-J	CONTACT	J1-P	CONTACT
J1-L	CONTACT	J1-S	CONTACT

## 11.2 D001R004 - Harvard Graphics

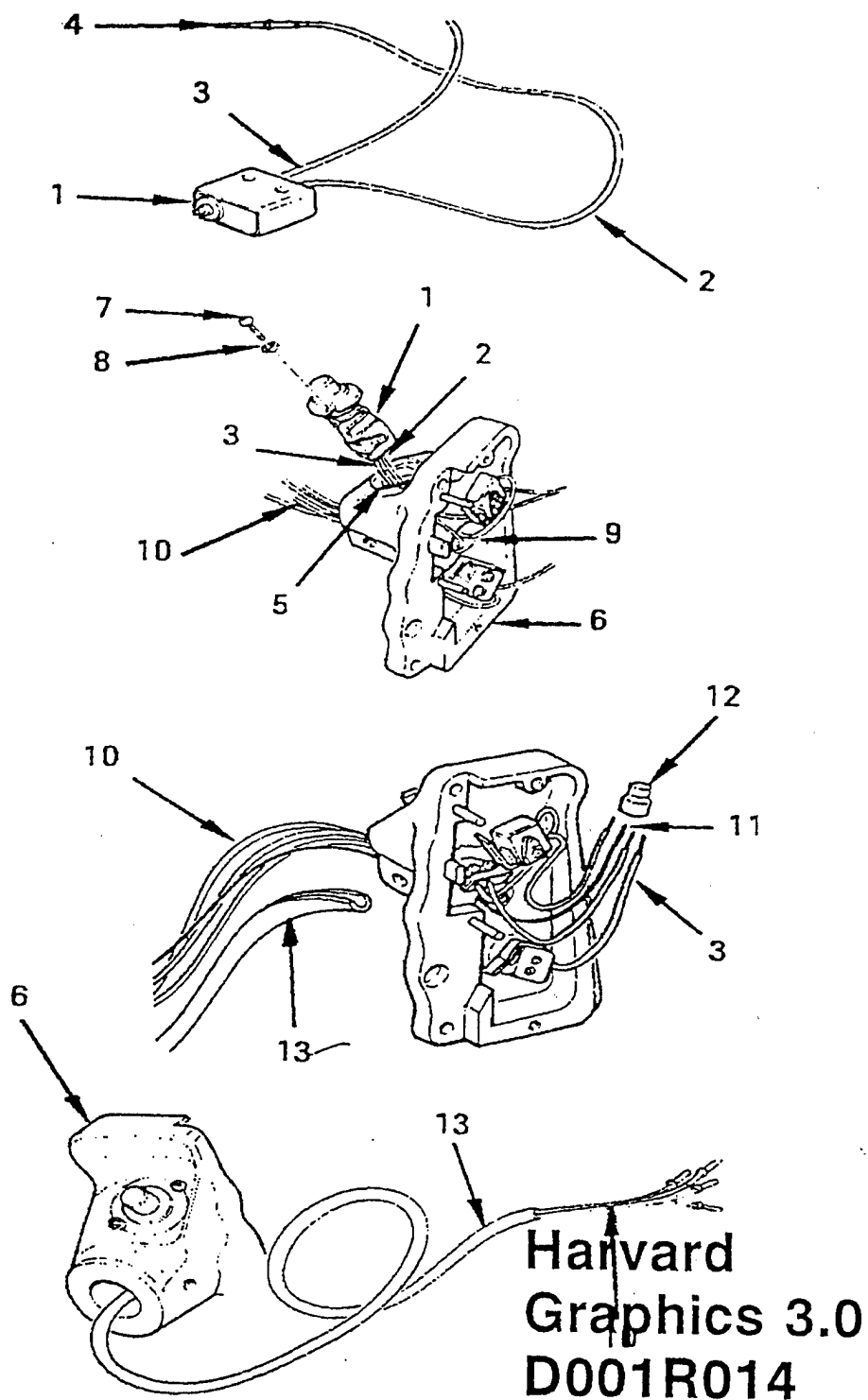


FROM	TYPE OF TERM	TO	TYPE OF TERM
TJ1-E	CONTACT	J1-A	CONTACT
TJ2-K	CONTACT	J1-B	CONTACT
TJ2-F	CONTACT	J1-G	CONTACT
TJ2-G	CONTACT	J1-T	CONTACT
TJ2-H	CONTACT	J1-R	CONTACT
TJ2-J	CONTACT	J1-P	CONTACT
J1-L	CONTACT	J1-S	CONTACT

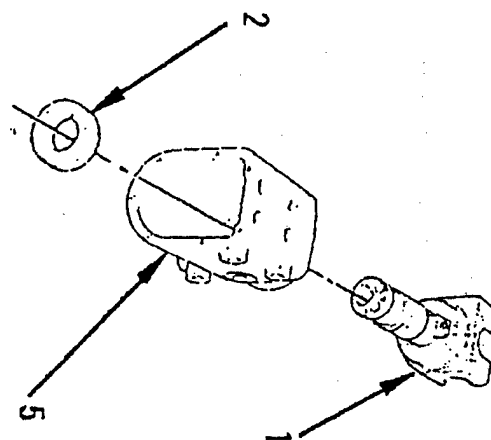
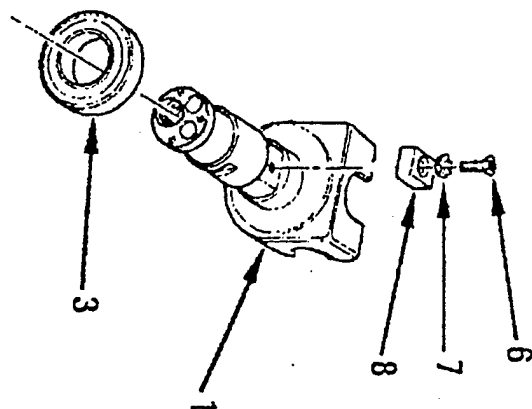
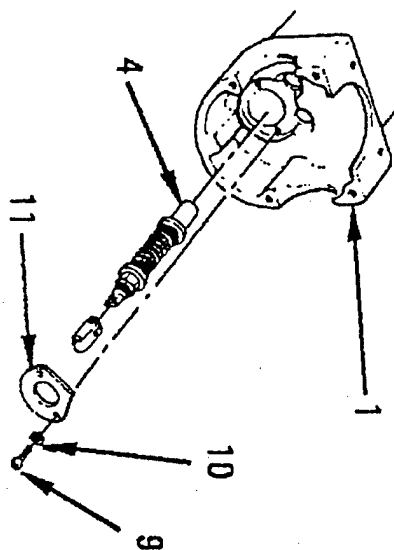
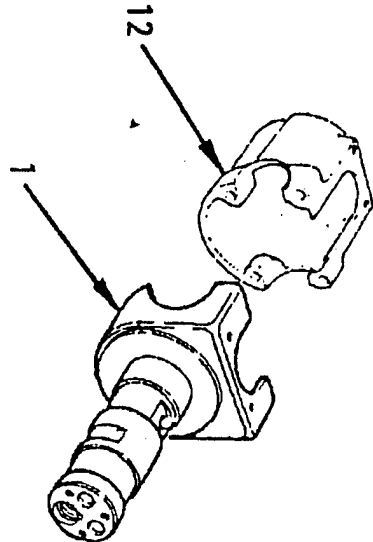
### 11.3 D001R014 - Preview



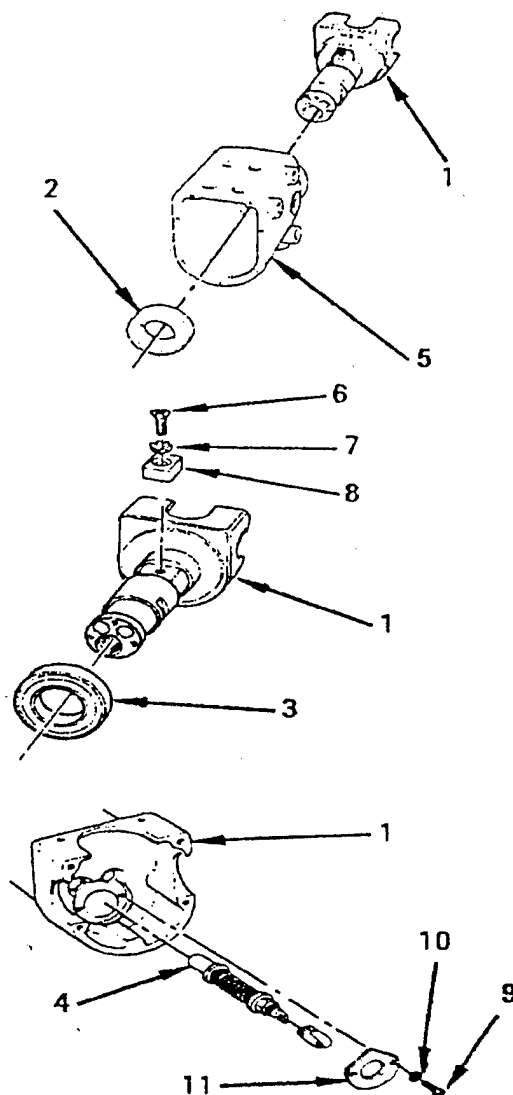
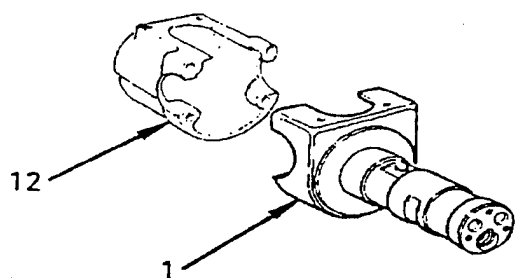
## 11.4 D001R014 - Harvard Graphics



## 11.5 D001R024 - Preview

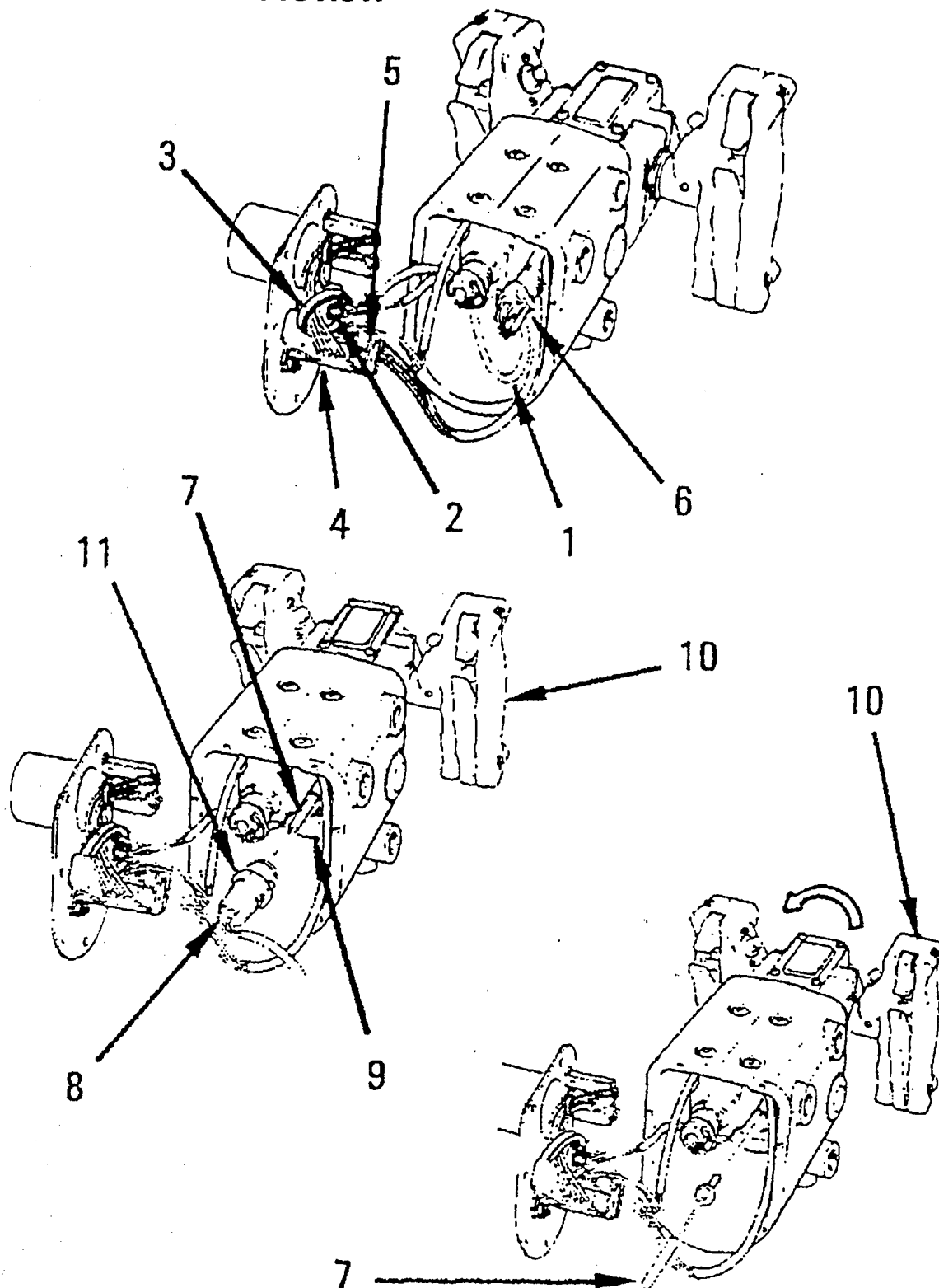


## 11.6 D001R024 - Harvard Graphics

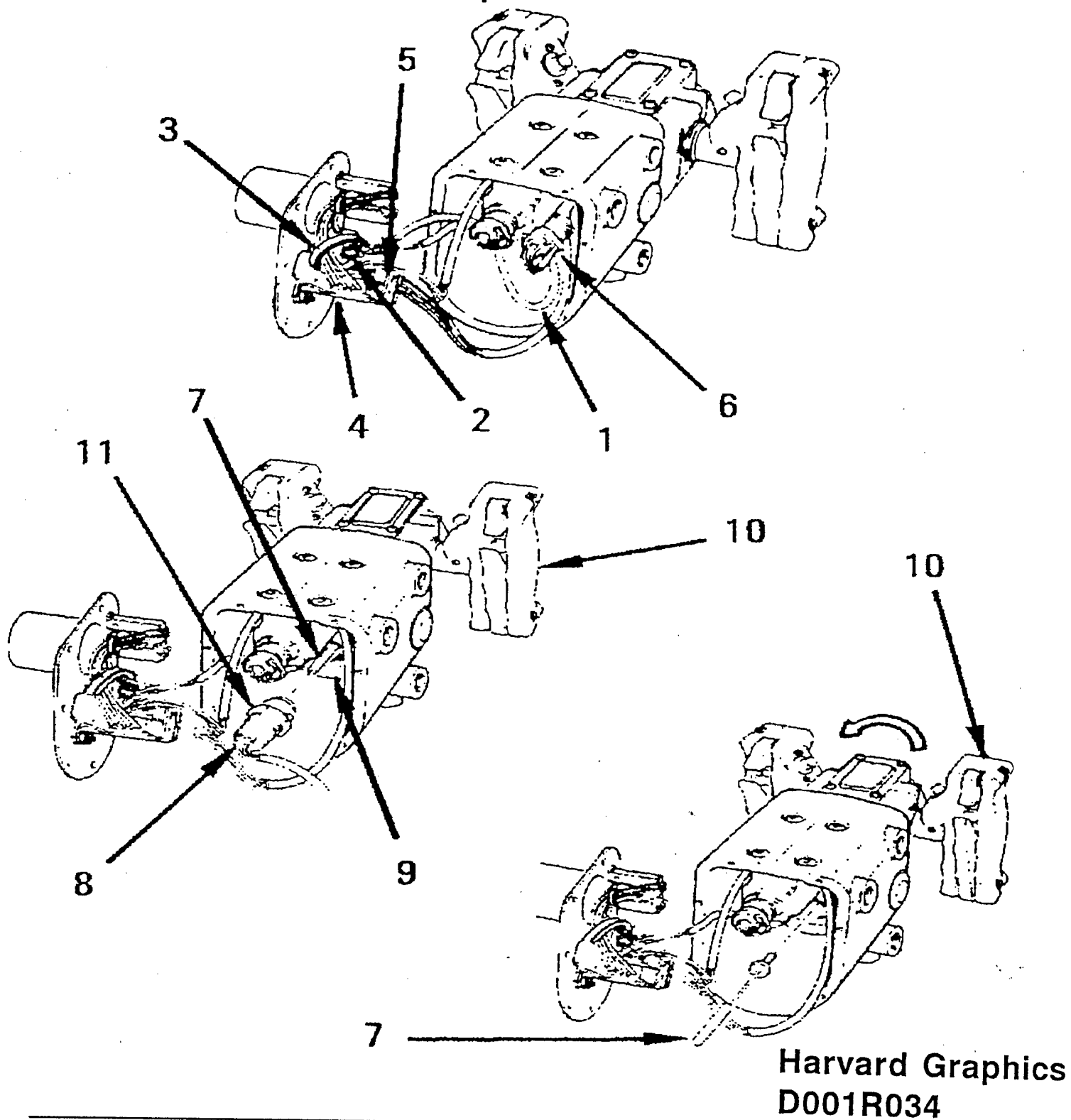


**Harvard Graphics  
D001R024**

## 11.7 D001R034 - Preview

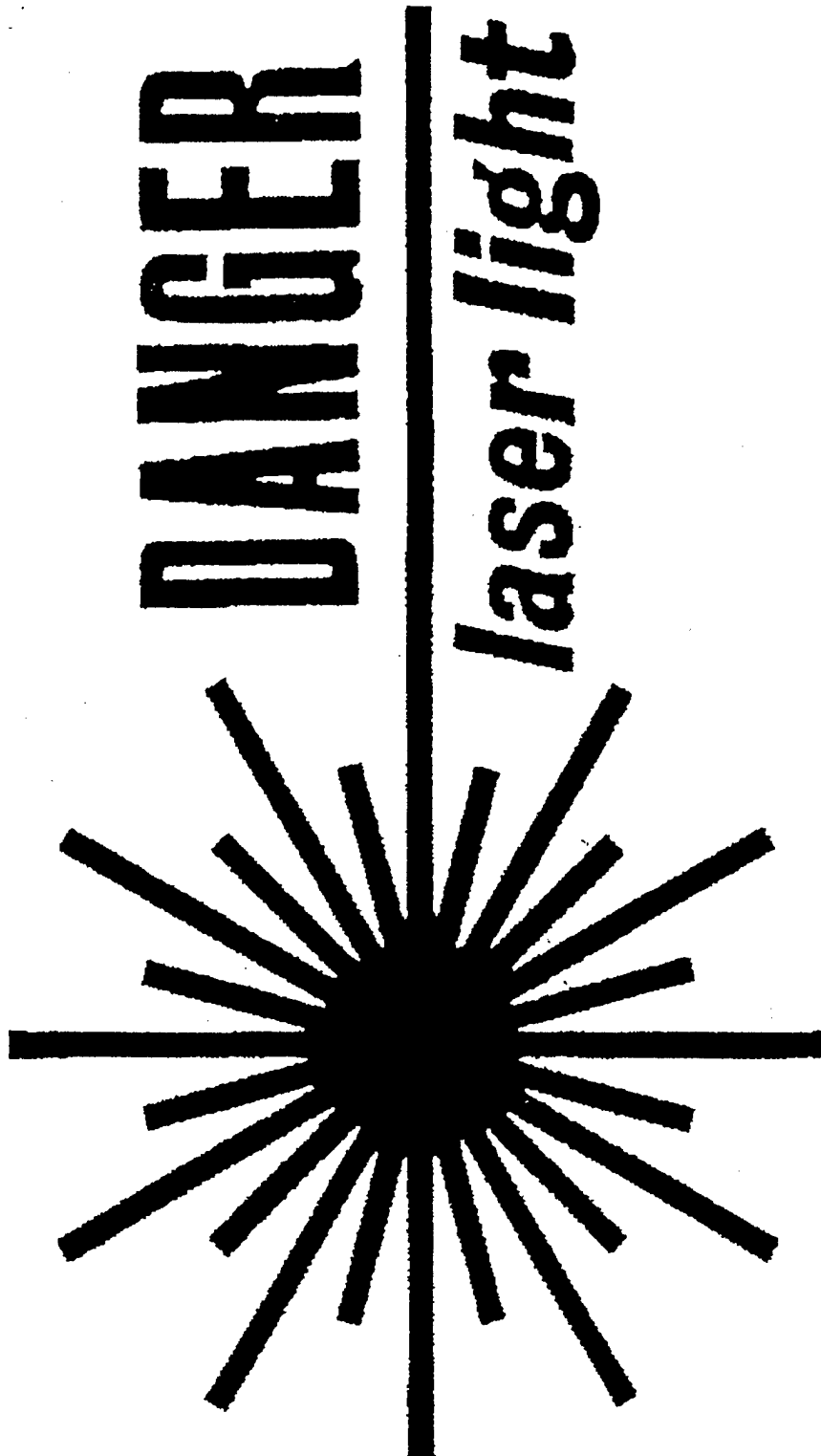


## 11.8 D001R034 - Harvard Graphics





11.9 D001R044 - Preview

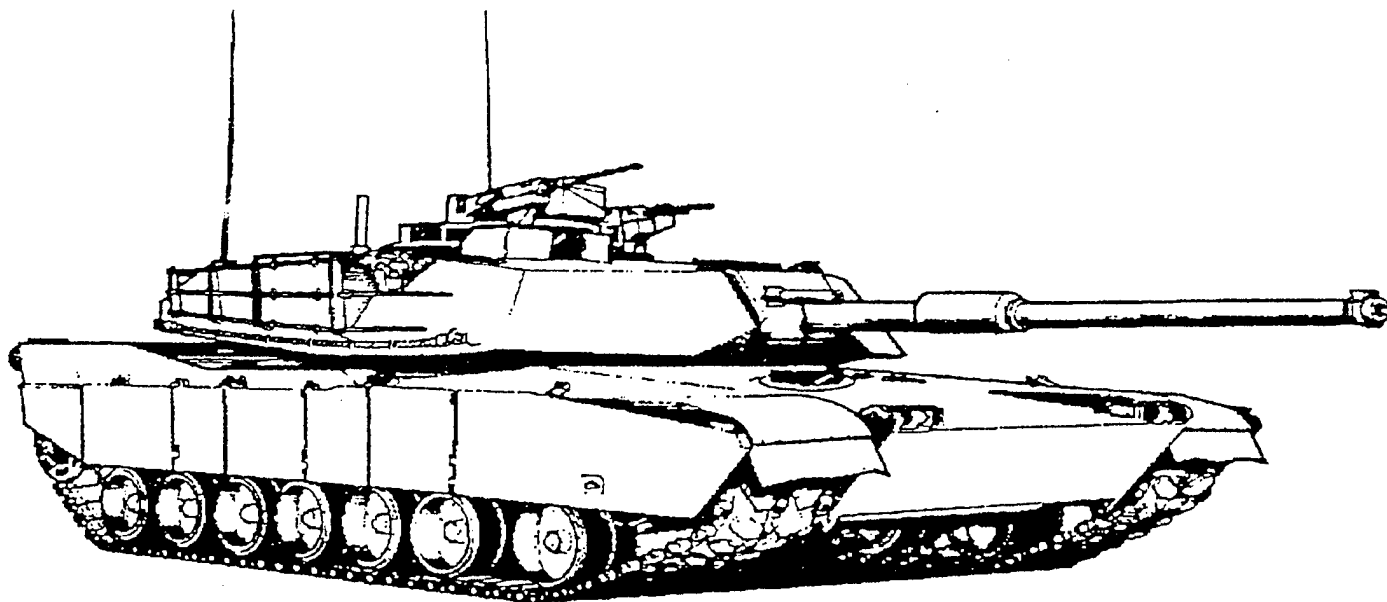


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11.10 D001R044/D001R045 - Harvard Graphics



Harvard Graphics - D001R044



Harvard Graphics - D001R045

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